WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a gate wiring on an insulating surface;

a gate insulating film being in contact with the gate wiring;

an active layer being in contact with an upper surface of the gate insulating film and including a source region, a drain region, and a channel forming region formed between the source and drain regions;

a protection film being in contact with an upper surface of the active layer; and

an organic resin being in contact with the protection film and including a trivalent or pentavalent impurity element;

wherein the protection film covers at least a portion of the active layer.

2. A device according to claim 1, wherein the trivalent or pentavalent impurity element is boron or phosphorus, respectively.

3. A device according to claim 1, wherein the organic resin has photosensitivity.

4. A device according to claim 1, wherein the organic resin has a light shielding property.

5. A device according to claim 1, wherein the protection film is formed by irradiating with an infrared light or an ultraviolet light to an initial semiconductor film.

6. A device according to claim 1, wherein the active layer is a crystalline semiconductor film formed by crystallizing an initial semiconductor film by irradiating with an infrared light or an ultraviolet light through the protection film.

7. A device according to claim 6, wherein the gate insulating film, the initial semiconductor film, and the protection film are formed through a sequential laminate formation step without exposure to an atmosphere.

8. A device according to claim 1, wherein a concentration of a trivalent or pentavalent impurity in the organic resin is 1×10^{19} atoms/cm^3 or more.

9. A device according to claim 1, wherein a concentration of boron in a semiconductor film at an interface between the gate insulating film and the channel forming region or at an interface between the protection film and the channel forming region is 3×10^{17} atoms/cm^3 or less.

10. A device according to claim 1, wherein a concentration of oxygen in a semiconductor film at an interface between the gate insulating film and the channel forming region or at an interface between the protection film and the channel forming region is 2×10^{19} atoms/cm^3 or less.

11. A device according to claim 1, wherein a concentration of carbon or nitrogen in a semiconductor film at an interface between the gate insulating film and the channel forming region or at an interface between the protection film and the channel forming region is 5×10^{18} atoms/cm^3 or less.

12. A device according to claim 1,

wherein the gate wiring has a single layer structure or a laminate structure, and

wherein the gate wiring has a film includes at least one selected from the group consisting of aluminum, tantalum, molybdenum, titanium, chromium and silicon, or a silicon film added with a P-type or N-type impurity.

13. A device according to claim 1, wherein the protection film has a thickness in a range of 5 to 50 nm.

14. A device according to claim 1, wherein the semiconductor device is one selected from the group consisting of a microprocessor, a signal processing circuit, and a high frequency circuit.

15. A device according to claim 1, wherein the semiconductor device is an electro-optical device or an electronic equipment.

16. A device according to claim 15, wherein the electro-optical device is one selected from the group consisting of a liquid crystal display device, an EL display device, an EC display device, and an image sensor.

17. A device according to claim 15, wherein the electronic equipment is one selected from the group consisting of a video camera, a digital camera, a projector, a goggle display, a navigation system for vehicles, a personal computer, and a portable information terminal.

18. A method of fabricating a semiconductor device, said method comprising the steps of:

forming a gate wiring on an insulating surface;

forming a gate insulating film and an initial semiconductor film into a laminate sequentially without exposing them to an atmosphere on the gate wiring;

irradiating the initial semiconductor film with an infrared light or an ultraviolet light to crystallize the initial semiconductor film into a crystalline semiconductor film and to form an oxide film at a same time;

covering a first portion of the crystalline semiconductor film with a mask;

providing a trivalent or pentavalent impurity element into second portions of the crystalline semiconductor film through the oxide film,

wherein the first portion of the crystalline semiconductor film is a channel forming region while the second portions of the crystalline semiconductor film are source and drain regions.

19. A method of fabricating a semiconductor device, said method comprising the steps of:

forming a gate wiring on an insulating surface;

forming a gate insulating film, an initial semiconductor film, and an insulating film into a laminate sequentially without exposing them to an atmosphere on the gate wiring;

irradiating the initial semiconductor film with an infrared light or an ultraviolet light to crystallize the initial semiconductor film into a crystalline semiconductor film;

covering a first portion of the crystalline semiconductor film with a mask;

providing a trivalent or pentavalent impurity element into second portions of the crystalline semiconductor film through said insulating film,

wherein the first portion of the crystalline semiconductor film is a channel forming region while the second portions of the crystalline semiconductor film are source and drain regions.

20. A method according to claim 19, wherein the gate insulating film, the initial semiconductor film, and the insulating film are formed in different chambers from one another.

21. A method according to claim 19, wherein said gate insulating film, said initial semiconductor film, and said protection film are formed in a same chamber.

22. A method according to claim 19,

wherein the gate insulating film and the insulating film are formed in a first chamber, and

wherein the initial semiconductor film is formed in a second chamber.

23. A method according to claim 18, wherein contaminants on a surface of the gate insulating film are reduced by active hydrogen or hydrogen compound before forming the initial semiconductor film.

24. A method according to claim 18, further comprising a step of forming a silicon nitride film before forming the gate insulating film.

25. A method according to claims 18, further comprising a step of forming a laminate film including BCB (benzocyclobutene) as a part of the gate insulating film.

26. A method according to claim 19, wherein contaminants on a surface of the gate insulating film are reduced by active hydrogen or hydrogen compound before forming the initial semiconductor film.

27. A method according to claim 19, further comprising a step of forming a silicon nitride film before forming the gate insulating film.

28. A method according to claims 19, further comprising a step of forming a laminate film including BCB (benzocyclobutene) as a part of the gate insulating film.